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Archæologia Nova Cæsarea

BY

Charles Conrad Abbott, M.D.

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PREFACE.

BECAUSE two relics of the one-time occupant of the open plain or the pathless forest are found during the same day, it by no means follows that the two objects were once in the possession of the same individual or that they were fashioned at practically the same time; yet, based upon such an absurd assumption is the view so strenuously insisted upon by the coterie which, after a most superficial glance at the territory in question (the tide-water area of the valley of the Delaware), finds itself limited to denying the discoveries of others who have borne the heat and burden of the day in actual exploration.

It is scarcely complimentary to the average intelligence that those who testify in the role of experts should offer negative evidence as of greater value than that which is positive. Unsuccessful themselves in the finding of artifacts in place, after careful search—not only the asserted search, but the care attending it, problematical—they would feign blot out of existence, by a toss of the head or scratch of the pen, all evidence of man's antiquity. Success has attended these unscrupulous efforts far more generally than should have been the case, or would have been, had the subject been treated honestly, as questions purely geological or historical are supposed to be.

Possibly the most glaring instance of this disingenuous treatment of the subject was based on the absolutely impossible examination of sewer trenches in the streets of Trenton, N. J., during the progress of their excavation. It admirably illustrates my contention. With a gratuitous

diagram to make it the more delusive, the statement was made (*Geol. Jour.*, I, 1893, pp. 15-37) that on the present immediate shore of the river rudely chipped argillite implements were found in abundance, but that there occurred no trace of such objects in the gravel at any significant distance from the river. In other words, that no such objects are ever brought to light when digging cellars, sinking wells, excavating for sewers or water mains, or any other deep removal of masses of earth. This is an absolutely erroneous statement as to the actual conditions, and reprehensibly so, because based on what should have been realized as insufficient knowledge of the region. The author heads the paper above referred to with the question: Are there traces of Glacial Man in the Trenton Gravels? Little wonder that he replies negatively to his own question. Negative evidence was his sole quest.

No speculation as to his own origin by palæolithic man could have been more wild, illusory, and often insanely grotesque than these frantic efforts of modern archaeologists to blot from history's page the existence of men whose manhood was yet as an unfolded bud. And the more strange, too, because theoretically man ought to be as old here as the so-called Trenton Gravels. Antiquity is called for when we survey the field as a whole. The study of aboriginal languages demands the lapse of many centuries. Yet, when special evidence of such antiquity is offered, the archaeologist becomes suddenly afraid of his own shadow and thinks the holding aloof for additional and yet more strongly confirmatory evidence is sanely valorous. Such attitude permanently holds back the truth.

When, by means of a spade, we explore the ground beneath our feet, after having previously carefully examined its surface, we are confronted by a condition which seems to be one of positive character, and yet it is as illusory, often,

in reality, as it is unquestionable in appearance. So many possibilities are there clustering about the inhumation of objects that it is rash indeed to measure antiquity by the depth at which any artifact may occur. Just as a warm day in January does not mean that June will be ushered in tomorrow, so an implement made and used by an Indian, so recently as when a neighbor of the white man, may occur at a depth that startles the discoverer. May startle, but should not, for the whole range of possibility is to be considered. Certainly no hole was ever dug and re-filled without abundant evidence of the fact. A tree torn by the roots from the ground, as in a notable tornado that leveled an orchard, leaves a deep hole in the ground. Springs that trickle patiently far beneath our feet wear away the soil until a blind cavern is formed, and then occurs a great slumping in the field, and the one-time level ground becomes the sides of a ravine. Intense cold has cracked the earth wide enough and these fissures have remained open long enough for an object as large as the ordinary arrow-point to drop from a few inches beneath the surface to a depth of six or seven feet. A trifling brook, that has rippled over the surface for centuries, may be turned aside and forced to flow in quite another direction, and the old course be so completely covered up that when discovered it has all the appearance of a relic of another geological era. The deep burrowing of many a mammal may be the cause of a recent relic's deep burial, and a cloud-burst, flooding a sandy area, may wash from gravel, where it had been an integral part of the deposit, a rude artifact and leave it upon the new-made surface, exposed to frost and heat for the first time in many centuries. I have witnessed all these things. I have been confounded many times. I have learned to be cautious.

Still, notwithstanding the confusion that confronts the student of the earth's immediate surface, there are yet re-

maining evidences of comparative fixity, and we can, through them, determine the major and widespread changes, distinguishing such from the minor and purely local ones. Were it not so, we might well despair of reaching to any conclusion concerning, approximately, the earliest appearance of man.

It is to be regretted that geology is not, as yet, more of an exact science, and not until it ranks with astronomy and mathematics will it be able to set permanently at rest many of the petty doubts that vex the archæologist. It is true that when treating of Laurentian rock, coal deposits or beds of cretaceous marl, the terms used are dependable, for there is no possibility of a human skull appearing and grinning a contradiction, but when we near the present and dig in, but not beneath the "pleistocene," "quaternary," "glacial" or "recent," or whatever term may be applicable to some particular point, then it is, that if gathered here, an association of geologists are scattered, like startled sheep, if asked the simplest question. An archæologist must be his own interpreter of geological conditions. If not equal to this, he is a mere collector of relics, and whatever the value of his specimens, his opinion is little worth.

Probably no river in the United States presents as important and comprehensive a series of archæological horizons as does the Delaware, from a short distance above its tidal flow to its final merging with the sea. The reason is obvious. The terminal moraine is but about fifty miles away. From it is derived the strata of post-glacial deposits of sand and gravel that form so marked a feature of the valley southward of the extension of the ice-sheet. The immediate surroundings, prior and during glacial activity, now and then at a significant elevation above the flood-line, were heavily forested and inhabited by an extensive and

varied fauna, and not a condition is discoverable inimicable to the highest interests of primitive man; but did he dwell here at that time? Did he know, in this region, the reindeer, the moose, musk-ox and mastodon? Did the walrus gambol in the Delaware's icy waters? Ay, there's the rub!

All that which has been set forth as evidence has been contemptuously set aside as having any archæological significance. If objects found suggestively deep were offered that were unquestionably artifacts, then they were intrusive objects, or, if the conditions forbade intrusion, then the artificiality could not be demonstrated, and the sweeping conclusion of these modernists was, and is, that referring all artificiality to the historic Indian, the purposes of archæological research are accomplished.

Whatever their entire significance may ultimately prove to be, the fact remains that large rudely chipped but distinctly fashioned implements of metamorphosed slate—argillite—which are indistinguishable in pattern from European palæolithic implements, have frequently been found in deposits of gravel, the history of which is unmistakably that of the closing activities of the glacial period, and so far as they were concerned, there was no evidence of such artifacts having become inhumed subsequent to the deposition of the containing bed.

A distinction should ever be drawn between the expression of an opinion and the statement of a fact, but such distinction seems generally to be lost sight of when treating of the archæology of the Delaware valley; by those, at least, who deny the glacial phase of such archæology. Possibly extreme timidity may be the explanation of this unfortunate state of affairs, but far more probable is it that a cultivated strabismus reverses the order, and placing the gravel on the surface and the soil beneath, necessarily makes the older appear the more recent. Be this as it may, there is certainly

more confusion of impression than infusion of fact in the archæological references we find in scientific journals, government reports and the homelier State reports concerning our surface geology.

If we are to accept the dicta of the many who have dilated on the subject, it would appear that whatsoever we must ascribe to man, be it bone or artifact, if found *in* the earth, is to be held as an intrusive object and really belonging *on* the earth.

As it happens, fossils old as and older than the tertiary beds are found upon the surface. Do they belong there?

The geologists can readily tell you why they do not.

Let a theoretically ancient trace of man be found where floods have washed the surface of a field and the geologist's insistence is that, being of human origin, it never was elsewhere than on the present surface; that it could be brought from beneath after an æon of burial is preposterous.

Happily for those interested in the final acquisition of the truth as to man's career in America, the geologist is yet to be born, with vision so penetrative and glance so terrible that doubt will flee at his approach.

The geologist cannot so readily explain the artifact.

His decisive manner, in the one case, is changed to sad uncertainty in the other. His yea was yea, and nay, nay, when discoursing of a shell, but now, confronted by an artifact or human bone, we are treated to endless polysyllabic circumlocution.

Ignoring, then, the literature of the subject, which bears no more important relation to the river valley than the clouds of dust and smoke that continually traverse its length, I returned, some years ago (November 20, 1901), to the rocks and accumulated material that fills the spaces between them and sought again to have them tell their own story of the past. Now, at the conclusion of my labors, I do not

find that it differs materially from that which I suggested was such history, thirty-five years ago.

It may not be out of place to include in these prefatorial remarks passing reference to the fact that, in the interests of several museums, a most competent, careful and tireless explorer has for many years been at work in the same locality that has been for so long the scene of my own labors. His purpose, as set forth by the directors of the several museums, was primarily to demonstrate the untenability of the position I have maintained concerning man's antiquity here, since 1872 (*American Naturalist*, Vol. VI, March, 1872. "The Stone Age in New Jersey."). The results of Mr. Volk have been confirmatory in many ways, and he is fully convinced of the correctness of my views. Unfortunately, there is no likelihood of his voluminous reports being published.

Happily, the river itself rolls on in its quiet, summery way, or rushes its winter's accumulation of ice impetuously toward the sea, unmindful of the strange stories told of it. This is fortunate, for in the telling of its own story we have glimpses of past history brought to light, easy enough to recognize as such, if we have the inclination to do so. The river speaks in no unknown tongue; she offers no hieroglyphics over which we are required to puzzle. All is plain as day to those who choose to seek the truth for themselves and avoid as they would a pestilence all theorists and the carping critic.

Whether or not a wise caution, whether, on any grounds, worthy or not of defense, it is not my purpose to discuss, but the indisputable fact stands that man is usually—we might, perhaps, say invariably—averse to studying his own, or a species allied to himself, precisely as he would another or all mammals. This, since the dawn of learning, has been the

inclination, albeit without warrant, of every student, to consider himself and all of his genus, if not his species, subspecies or race, as absolutely without the bounds of those accepted methods of investigation that apply to the inferior forms of life, or, in other words, that man is not amenable to Nature, but to himself and the Supernatural. So long as this disposition prevails in anthropological studies, so long will confusion enveil the object studied and the progress of knowledge be retarded.

In the following pages I am concerned only with that people which held in their possession the valley of the Delaware river prior to the seventeenth century. Whether they were here by right of conquest, or peaceful occupation, or direct descendants of a less cultured folk of a preceding geological period, probably cannot be determined without some lingering shadow of a doubt, but this point is not so important as an historian might deem, for whether the sequence of event that I hope to demonstrate is that of generation following generation, or the elimination of one people and succession of another, is of little moment.

The point is, there was a day when never a human foot had pressed the turf of this river valley, and the day dawned when the valley lay before man, with its sparkling waters flowing through miles of up-lifted rock and then idly spreading over sandy plains until lost, at last, in the insatiable sea.

What was the career of this initial irruption of manhood in the valley? It seems at first glance that the improbability of ever knowing is equal to or greater than our desire to possess the facts. But effort, if rightly directed, is a solvent of many difficulties that, idly regarded, appear impregnable. In this instance the right direction, as I regard it, is in studying the historic Indian and his ancestors or predecessors, as the case may be, as a feature of the region's fauna, along with the deer, beaver and opossum and noth-

ing more. In this light his relics are of historic value, in part, and others more of the nature of true fossils. So doing, we encounter fewest difficulties and the facts we gather are intelligible and satisfy all our longings for knowledge of the past. But once we associate the Indian with other peoples and grouping all as something other than a phase of mammalian life, that moment theory becomes rampant and dire confusion follows.

There appears to have always been a certain misconception on the part of geologists who have taken up this question, in that they held that the age of any deposit wherein an artifact may occur is the crowning point of the whole controversy. It is really not a matter of the slightest importance, and the wrangling of experts and savans simply stands for so much energy wasted. The aim has been on my part, and I believe I started the ball to rolling, is to demonstrate a certain sequence of event, as already specified. It is not a matter of moment whether this started in pre-glacial, glacial or post-glacial time. Did it start at all?

Accepting the proposition that it did, the question of probability arises as to whether the appearance of man in America was likely to have been at so late a date as post-glacial. There would be no physical barrier to man entering the continent during glacial times, if its shores were reached south of the area affected by the ice, and certainly it is within the bounds of possibility. We know as yet too little of South and Central America and the West Indies to assert that nothing can be expected of that region and that the northern region, Behring's strait and adjacent territory, was the sole scene of the initial immigration.

Surveying the entire outlook and seeing, as I claim I do see, the three horizons of palæolithic, pre-Indian and Indian, here in New Jersey, I incline to the view of pre-glacial

occupancy of the country, but if this is demonstrated to have been impossible, it by no means affects the question as to that sequence of event for which I have contended.

The material upon which the following report is based consists of the author's personally-collected specimens, now in museum of Princeton University, and grateful acknowledgment is here made of the pecuniary assistance, so generously provided by Messrs. M. Taylor Pyne and Junius S. Morgan, of Princeton, without which the collections could not have been made and this report thereon published.

C. C. A.

THREE BEECHES, Trenton, N. J., Feb. 18, 1907.

ARCHÆOLOGIA

NOVA

CÆSAREA

IMPLEMENTS AND ARTIFACTS.

A SERIOUS difficulty confronts us when we attempt to place a proper value on the term "primitive," as applied to mankind at the outset of his career, or that period when the influence of pithecoidal propensities was almost lost. Certainly this far-off day in human history ante-dates man's appearance on the North American continent, judged by the traces of his presence as yet discovered. Still, the advance toward what is now recognized as humanity was not strongly marked. Mentality had not the animal under absolute control. The animal was not yet convinced that intellectuality was altogether and under all circumstances wholly desirable. There was constant struggle, while ape-like chatterings were giving way to mumblings and cries that were scarcely more suggestive and intelligible.

A marked feature of advance was not so much the use of natural objects for defense and other purposes, for monkeys know the value of a weapon, as when a cocoanut is dropped in a pre-determined direction, but in the selection of objects peculiarly suited to their several purposes. When ancient man first faced a gravel bed, with a gleam of intelligence in his countenance, and noted the infinite variety of shapes and size of the pebbles, that moment was the daybreak of his intellect, and when his hand grasped a selected stone and he used it, rather than his fist, to effect a purpose, that day implements were brought into existence; a new idea, a new world, a new train of thought was started on a career that is yet pushing onward, and will continue its irresistible journey till the end of time.

The implement, therefore, ante-dates the artifact, meaning by the former any natural object that man has put to use to further his endeavor. To-day, if I pick up a pebble and with it crack a nut, that pebble, for the time being, becomes an implement. Obviously, such use may leave no trace behind it, and if stones were used but once and tossed aside and another chosen when next a need occurred, it would be in vain to seek for evidence of man's presence, but it is quite within the range of probability that stones peculiarly well adapted to certain uses were retained, and so the idea of property dawned upon the primitive mind, and such chosen stones—now implements—would show the effect of wear and tear in time, and I doubt not but that specimens often, which have been gathered from gravel deposits, having attracted the attention of the archæologist when in search of "conclusive" evidence, are discarded as indefinite, when really they are as much a proof of man's existence as the desired palæolithic artifact. I think this, because on many a village site, associated with the most specialized forms of stone implements, we find battered and slightly-chipped pebbles that are not, as there found, objects of doubtful significance. Replace them by similar objects from the gravel, as can easily be done, and not an archæologist lives who can tell the one from the other.

The difficulty is enormous of determining between such abrasions, fractures and rubbing of surfaces as natural forces bring about and those resulting from the use of a stone by man as an implement. It is so often impossible that the attempt had better not be made, for though the archæologist may be able to satisfy himself, he will fail to convince anyone else, for, as experience has shown, it needs but the negative nod of ignorance in office to nullify the results of honest toil in the field. Nevertheless, such thankless undertaking should not be always shunned. It must

not be forgotten that man existed undeterminable thousands of years ago, and when his manhood dawned, and for long afterwards, he was leaving scarcely more traces of his elemental culture behind him than do the anthropoid apes of to-day. Surely, a battered pebble is scant evidence of man's presence so long ago as when the melting up-river glacier was pouring its mighty flood down the valley of the Delaware, and while there are pebbles and pebbles and marks of violence and marks of violence, is there or not the remotest chance of unquestionably distinguishing between those that are referrible to nature and those referrible to man?

I have in mind a high, dry, sandy field, to which Nature never carried a pebble. Nothing but sand, and this resting, twenty feet below, on clay. Yet, stones are not uncommon, from pebbles not larger than a pigeon's egg to boulders of considerable weight. There is no contradiction here. Every stone was brought to where it now lies by the Indians. Not all show signs of use, but by far the greater number tell their own stories of playing the role of implement. They are worn away in places by reason of continued and violent contact with other equally hard or more resisting objects, "pecking," as it is usually termed; they are rubbed down until their polished surfaces fairly glisten; some have been exposed to fire and are cracked and discolored by the heat; some, doubtless, were gathered because of their color, and were treasured as ornaments, or, when nearly globular and small, used in playing games. Whatever the history of these pebbles, altered and unaltered, as a whole, here they are, and have in common the archæological significance of having been brought to a village site by the villagers.

In two respects they are of great interest in their bearing on the question of the traces of man in the "Trenton Gravel." They show how all-important a part pebbles played in man's career at its outset, and, again, the slightly battered

specimens of the village site are duplicated by pebbles, similarly abraded, occurring in the gravel. This brings us, in turn, to the question of the possibility of distinguishing between naturally and artificially battered pebbles. He comes nearest the truth probably who, holding in check the too often reckless enthusiasm of the archæologist, avoids also the cold-blooded caution of the geologist.

The mark left by the sudden contact of one stone with another may or may not be very conspicuous, but it invariably (?) has the character of a single occurrence of such contact. If, again, these same pebbles should come in contact and another trace of like violence be left, the chances are certainly infinitesimally small that such marks should be at or practically at the same point. Pebbles as a mass, after having been smoothed to uniformity of surface by water-wearing, are, when violently agitated, which seldom occurs, irregularly pitted; but, on examining the selected pebbles from the village site, the battered specimens have abraded surfaces only at certain points, and these are just those that would be exposed to violent contact, if used as hammers, as in pecking away the surfaces of other stones, as when pebbles were shaped to axes, celts and pestles, or in the humbler use of cracking nuts or crushing seeds in a shallow mortar. We never doubt the artificial origin of such pecked surfaces. Now, it happens that we occasionally find pebbles in the gravel with a trace of this localized pecked-away or battered surface, and such specimens are worthy of a good deal of serious consideration. If we found them on the surface of a field, their claim to archæological significance would never be disputed, but, occurring in the gravel at some depth, there is a possibility of a "natural" origin of the abraded surface, and so all such objects are peremptorily ruled out of court. This may be a safe procedure, so far as the judges are concerned, but so doing is far away,

possibly, from the actualities involved. We can come to no positive conclusion, it may be, but of this I am sure that the probability is largely in favor of many a battered pebble that is now, and for centuries has been, a constituent part of the gravel deposit, having become battered because used as an implement.

What has always been urged as an insuperable difficulty to the presence of man in the Delaware valley at the time of the last general re-assorting and re-depositing of the irregular gravel beds that now constitute so marked a feature of the valley at the head of tide-water is that humanity, in such primitive condition as to be dependent on pebbles for implements, could not have reached this distant point of the Atlantic seaboard from the center of distribution of mankind. As to this, we do not know where such center was, or centers were, if more than one. Certainly, this is an important matter, not yet finally determined. The Asiatic origin of American man is nothing more than an assumption, and I hold that as time does not enter into the question at all, there is no greater difficulty in a migration of such primitive man or his gradually spreading over a vast territory than in the migration of any other mammal, and the difficulty decreases when we look upon it as a very gradual dispersion and not a predetermined effort to go up and possess the land in any one direction. The most formidable objection that I can see in the existence of strictly pre-glacial man is the, as yet, complete absence of any trace of him. We prefer facts to theory, just as we have them in abundance in the valley of the Delaware, where the popular theory of his non-existence finds scanty basis. The battered pebbles and an occasional flat one from which a few very suggestive flakes have been detached, hold the attention of the collector, who is ever hoping for more tangible evidence of man, and, as I have felt for many years, deserve to be considered more seriously than they have been.

THE PALÆOLITHIC ARTIFACTS.

And what now of that associated form, the palæolithic artifact? Indeed, it may well be asked, what is it? Is there a type of implement than can readily be recognized as something separate and apart from an unfinished object of a later pattern?

When we speak of a palæolithic artifact as a pointed object, from five to eight inches in length and the product of man's handiwork, we have gone over the entire range of certainty, and all subsequent comment must necessarily be suggestive and forever subject to change of view. As no European ever saw a native American use such a tool or weapon, as the case may be, it is obviously but conjectural how he did use it; but that there was one or more definite purposes in the mind of its fabricator is certain. That it was not a "simple" implement, as suggested by Brinton, is probable, as to hold it in the hand would have been awkward, and blows with it not particularly effective, except in hand-to-hand encounter, which probably was not the chief occupation or amusement of primeval man. If, in those days, man was quick to pick a quarrel, such an object as a palæolithic implement would be far more effective as a weapon, if hafted, and so it is not a rash conclusion to reach that such man had a wit equal to the invention of a handle to his favorite weapon. Thus armed with a "compound" weapon, as Brinton calls them, he who wielded it was not ill equipped to meet the attack of any foe. Implements of obsidian, as rude, if not more rudely fabricated, were recently and may yet be in use among the South Sea Islanders. The undisputable palæolithic artifact has, since the day of its use as the armature of ancient man, been largely reproduced in the fashioning of more specialized implements, and this has led

to much confusion in the minds of lay readers, through the amusing whims of strenuous modernists, who have examined—not explored—the territory in question with notable lack of critical acumen and apparently with no serious intent. The result of such conclusions as were reached and given to the public—with which admissions in conversation do not tally—is that all unspecialized artifacts are “Indian rejects.” The truth is, the resemblance, as stated, is purely accidental, and the differences ever existing are readily detected by those whose studies have not confined them too closely to the museums. It must, too, never be forgotten that the circumstance of occurrence, the condition of object and whether associated or dissociated, so far as unquestioned recent artifacts are concerned, must be ever kept in view. Apparently, this care has not been exercised by those who desire that evidence of antiquity shall not materialize. The distinction between historiography and archaeology has not been suspected. The former has been held to be equal to all the demands of the conditions obtaining, and the latter, while perfunctorily referred to, has not been recognized as what it is, but as something that really had no case in court.

Considered collectively, the palæolithic artifacts are made of argillite, a metamorphosed slate that is readily shaped under moderately skillful manipulation, the fracture under pressure or well-directed blows being conchoidal, and so all the excellency of flint, for such purposes, is present. While this material, argillite, is *in situ*, not far above the limit of tide water—about twenty miles—the earliest inhabitants of the Delaware Valley were not necessitated to seek any outcrop of the mineral, inasmuch as large boulders of the same were everywhere to be found, where the glacial floods had spread out a deposit of gravel. These detached masses were

utilized and the indications are, were used long before their origin was known to the primitive chipper. It is altogether safe to assume that the region of occurrence in place of this argillite was inaccessible to the men who first chipped the boulders that were scattered over the habitable areas.

An Indian "reject" made five hundred years ago and a palæolithic artifact made probably five thousand years ago, if the material is identical, would, it is natural to suppose, present different degrees of weathering or surface decomposition in some measure consonant with their relative age, but this is not necessarily the case. The older object, if so buried as to be protected from corrosive agencies, may retain a freshness of surface that has long been lost by the "reject" lying near the surface and alternately exposed and buried and subjected to frost, heat and erosion by wind-driven sands. This is the history of many an Indian relic, and often we find them so far altered that the definition of the chipping and minor features of design are obliterated; but a true palæolithic artifact from gravel undisturbed for centuries is practically the same as when fabricated, and only the sharp lines indicative of detached flakes have been worn away. They often have a freshness of surface that is disturbing to the advocate of antiquity, and the collector is puzzled to fit his ideas to the object that seemingly is of very recent origin. This must ever be borne in mind, and then confusion is not likely to arise. It is in the museum or the library that trouble comes. When in the field—his only proper place—the archæologist realizes, as he can nowhere else, what changes in the region have taken place, and the distribution of newer and older conditions are distinctly defined; in short, the procession of the ages passes by. Again, such ancient artifacts are found singly. Among a million pebbles, a deeply buried stratum of sand, beneath a narrow band of clay, anywhere where deposits through icy

floods and floating ice occur, deep or near the present surface of the field, we may look with some confidence, but necessarily the chances are against their discovery. These chance relics of forgotten time, dropped by accident and at once buried by the shifting sands, have been left from then till now, as a veritable pebble among pebbles, hidden effectively from any destroying agency and remain recognizable but mute witnesses to the men who roamed this river valley when every feature of it was wholly different from what now obtains.

The true artifact is a finished implement. The same cannot be said of the Indian "reject." The palæolith, if desired, could be readily reduced to smaller size or even to a different design, but the true reject shows why it is such, and that further expenditure of effort would be in vain. The "fault" in the mass of material selected is plain or its generally intractable character apparent, and so the reason for rejection evident, but this cannot be said of the undoubted palæolithic artifact. It is as much a finished implement as an arrow-point or a grooved stone axe. There is yet another point to be considered. In the immediate valley of the river, these ancient implements are either buried and exposed by digging or are found in the talus where an escarpment is gradually crumbling away; but they are not confined to such areas, but are found buried or unburied, as the case may be, miles away from the river's shore or such adjacent land as was affected by its activities as the outlet of a glaciated area. Palæolithic man was not a semi-amphibious creature and dependent on water as much as land to lead the life he did. He may have been much as is the Greenland Eskimo of to-day, but not necessarily. His was no insignificant territory, even here in New Jersey, for the coast line was then different, and much land, now lost to us, was familiar to him. This, I unhesitatingly assert,

because what I believe to be true palæolithic artifacts have been found in the southernmost counties of the State. I have found them in both Atlantic and Cape May counties, and throughout the whole intervening area, from the present coast line to the immediate valley of the Delaware, they occur singly, and usually where the ordinary Indian relics do not occur. Often so worn by exposure to the shifting sands, to frost and rain, they are not readily recognized, when seen apart, but when a series are brought together, the lines of original fracturing can be traced by aid of those that have been protected from weathering. There is a limit to this, however, and many a perfectly smooth pebble of argillite, with no definition of chipping remaining, may have been a sharply defined artifact in its day, just as we know that many a now shapeless splinter of the mineral was an arrow-point, because of some slight tell-tale feature remaining. This view is strengthened by the fact that water-worn artifacts occur in the bed of the river, so smooth and even polished that the thought of their having been once chipped would not occur were the practiced archæologist not able to trace the lines that once were prominent, notwithstanding the grinding and polishing to which they have been subjected. Placing one such beside another that has escaped erosion and the same history, so far as artificiality is concerned, can be seen to apply to both, but seen alone, the eroded or smoothed one might be readily passed unrecognized.

What to many has seemed a valid objection to the view of a one-time occupation of the valley of the Delaware by palæolithic man, is that raised by the results of an examination—in no case exhaustive—of the conditions obtaining in the immediate vicinity of the occurrence of argillite *in situ*. Here, amid a mass of flakes, splinters and chippings in-

numerable, are found unfinished implements and rejects that bear a marked resemblance to the claimed ancient finished artifacts found miles distant. Why, it is triumphantly asked by the explorer of the non-tidal reaches of the valley, are not the scattered objects—the so-called “palæolithic” implement—simply those unfinished forms which the Indian elected to retain and carried away with him, or, if found in the immediate valley, might they not have been carried down by the freshets since Indian times? These questions demand that they be very carefully answered. They are very pertinent and apparently present serious objections to my view. Had I not intimate knowledge of the conditions both in the non-tidal and tidal areas, I should be perplexed, but as it is am not disturbed, as the two points, the tidal and non-tidal, have really nothing in common, so far as the archaeology of the entire river valley is concerned.

As I have already pointed out, the objects found in the tidal areas were made—if made in pre-Indian time, as I claim—of argillite boulders found on the spot, and this is the more probable because the ice at present, and equally true of it in Indian time, does not transport masses of stone as large as an average palæolithic implement. A careful examination of the ice as it has floated from the up-river regions and accumulated in the tide-water shallows, shows that nothing of greater bulk—in stone—than sand and robin’s-egg pebbles are transported, and the number of the latter is very inconsiderable. If not floated, or, more properly speaking, carried by the ice, may they not have been rolled along the bed of the river? Doubtful, to say the least, and if so, their journey, under such circumstances, of some twenty miles would leave such indelible marks that the fact of their transportation after this fashion would be obvious to all. Chipped implements, as already pointed out, which have been subjected to much water action, present unmis-

takable evidence of such exposure, and are readily recognized as such when compared with upland specimens. These water-worn artifacts are not, as I claim, intrusive objects, but integral parts of the gravel deposit which now forms part of the present river's bed.

It must be remembered that the action of the ice, when moving, as when there occurs a "break-up" in the spring, is different in the up-river and tidal-river localities. In the former the ice is largely grounded, and, when moved, necessarily pushes the gravel before it, so that a clean, sandy beach of an island that one summer may be free from large pebbles, may be covered with them the following season, but when these same cakes of ice reach the deeper tide-water they float and so cannot aid in the transportation of anything not encased in them. After many a year's search, I have found no ice-encased pebbles that were one-hundredth the bulk of an ordinary argillite artifact. Buoyant articles, as wood, eggs and shells, have been frequently found, but never a stone that would weigh a pound or two. This up-river ice, reaching the gravel bluff at Trenton, rests against it and is often piled to more than half its height. The bluff itself is not materially affected by this ice, and when the force of the accumulated waters dammed by the ice causes the gorge to give away the break never occurs along shore, but near the middle of the stream, and long after the river is clear and navigation is resumed the shore ice remains where originally lodged, and slowly melts away. It is the water-freshet, due to great rainfall, that undermines the bluff at times and causes it to crumble. This has been going on for so long a time, and so rapidly since the deforesting of the country, that the river is now far wider and shallower than when the Indian dwelt along its banks. Not a colonist of the seventeenth century, could he return, would recognize the Delaware of to-day as the river that was so attractive when he saw it first.

Other explanation than transportation from the rock *in situ* must be sought for the presence of those implements found mingled with the gravel and now exposed to view. Mr. W. H. Holmes has suggested that an Indian, walking along the river shore, chose a pebble and attempted to fashion a blade. The mineral failed to lend itself satisfactorily to the implement-maker and he tossed it aside. Here, centuries later, we find this "reject," and presumptuous, is it, indeed, to look upon it as anything else. Why could not an Indian walk upon exposed gravel and pick up a pebble as well as we can to-day?

There are two considerations to which we must give heed when this question is asked. We are, in the first place, tacitly informed that the Indian was given to chipping stone in this haphazard way to supply a sudden need upon the spot, all of which is a gratuitous assumption, for though argillite boulders and pebbles were available, there was, doubtless, selection of material exercised, if we may judge from the fact that argillite artifacts, as we find them, show no evidence of intractability, and could have been reduced in size; hence, in no sense can the term "reject" be applied to them. The impracticability of reducing a piece of argillite to desired shape would be so early recognized that real failures would have more the appearance of frost-fractured stone and be little suggestive of human interference. Then, again, if the object as found has been lying undisturbed on the river shore for centuries—two centuries at least—why is it that the chips are not there also? These are never found under such circumstances. In fact, they are very rarely found at all in the gravel where the implement itself occurs, and yet in numbers they exceed the "reject" or finished object at least as ten to one. Furthermore, we are asked to believe that the river shore where we find rude implements is the same to-day as when the Indian wandered

along it centuries ago. Everywhere the river shows clearly how the never-resting tidal flow wears away the shore, carrying sand and fine gravels from one point and spreading it elsewhere to form a sand bar, it may be, and turning the channel from one side of the stream to the other, and so exposing long reaches of the shore to wasting, that for many a year had been fixed and apparently secure. Often the mud is entirely removed from the underlying gravel, and abundant traces of Indian occupation are brought to light, and, less frequently, so strong a current attacks a given point that even the gravel is moved and deep holes are formed, to be filled in time with the wasting shore from a point perhaps a mile away. This is the story of the river of to-day, and so it has been for centuries; and yet we are asked to believe that we can fill the moccasin prints of the Indian by walking now along the water's edge. I submit that it is asking a great deal too much.

It has been suggested that rudely chipped implements, when found on the gravelly shore of the river, have fallen out from the bank and rolled down from where they had long been lying. This is not at all improbable; but how does this modernize the object, when the gravel extends quite to the surface? The pebbles and bowlders at the top of the bank are clearly as much a part of the deposit as are those at its base, and while the surface may be—is, in fact—less ancient than the deeper gravels, still they can not be dissociated; and it is a significant fact that we find, on the gravel at the foot of the bluff or other exposure, only the rude argillite objects at the water's edge or on the flat laid bare at low tide, and not a general assortment of the Indian's handiwork, including pottery; and we must not overlook the fact that the "gravel-bed" implements bear evidence of all the conditions to which the gravel itself has been subjected—this one stained by manganese, that incrustated with limo-

nite; this fresh as the day it was chipped, because lost in sand and water and not subsequently exposed to the atmosphere; that buried and unearthed, rolled, scratched and water-worn until much of its artificiality has disappeared. The history of almost every specimen is written upon it, and not one tells such a story as has been told about it by the originator and advocate of the "Indian-reject" theory.

As I have already mentioned, it has been stated in the most positive manner, which only positive evidence could warrant, that artifacts have not been found *in situ* in gravel deposits at a distance from the river, and such, *if there were such*, as appeared to be in the gravel, were recent intrusions. This statement, in its several parts and its entirety, is absolutely incorrect, and no excuse can be offered for its publication. It is to be explained, however, because avowedly predetermined. Wherever the glacial gravel of the Delaware tide-water region is found, there palæolithic implements occur, as they also do on and in the surface of areas beyond the gravel boundary. We accept, notwithstanding the unscientific source of the suggestion, the statement that post-glacial floods inhumed all traces of man found beneath the superficial soils, and find that, if these traces are considered in that light, some mysterious power was behind the senseless flood, and always buried argillite palæolithic implements far down in the gravel, and then selected argillite artifacts of more specialized forms for the overlying sands and reserved the pottery and jasper arrow-points for the vegetation-sustaining soil. This, as stated, is absurd, but such is the order of occurrence of the traces of early man in the upland fields.

Much stress was laid by this same author upon the negative evidence of failure to discover artifacts when extensive excavations for sewers were made in the streets of Trenton. It is not at all strange that no palæolithic implements were

forthcoming. The digging in question was always so narrow, so deep and generally so dripping with moisture that it was impossible to examine the sides of the excavations, and so treacherous withal, this gravel, that as the dirt was removed the trench was planked to prevent caving. No human being ever could or ever did make any critical examination of these sewer trenches, and all that could be done was to examine the gravel as thrown out, shovelful at a time. This I did for many days, and never was aware that there was another Richmond in the field. As we all know, when a hole is dug, the dirt from the bottom is on the top of the heap thrown out. Now, it does happen that I found at the very crest of a ridge of gravel thus tossed out from the trenches, two artifacts, which were forwarded to the Peabody Museum, Cambridge, Mass. And what if nothing were found? Negative evidence at most. But consider the territory explored! We might as well think we know a field by following its fences. Mr. Holmes hoped to find a grain of dust on a thread of gossamer, or, what is far more probable, was desperately afraid that he might do so. This really is all that need be said on this phase of the subject.

It would be strange, indeed, if the Trenton gravel, with traces of man therein, should contain no other evidence of animal life. Such a condition would greatly complicate the question, and we might well look askance at asserted evidence of a human being living under such. It must be made apparent how he could have lived, and this is done by the occurrence in the same deposits of a wide range of mammalian life. The report of the State Geologist, for 1878, informs us: "There has been found in the terrace of modified drift at Trenton the tusk of a mastodon * * * the inference seems plain that the climate at that time (*i. e.*, during the deposition of the Trenton gravel) admitted of

the growth of animals like the elephant in size and habits." To this I would add an extract from a paper by the late Samuel Lockwood, on mastodon remains from New Jersey. He remarks, in the conclusion of his most interesting account :

"Two facts have much impressed me—the great geological antiquity of the mastodons as a race, and the very recent existence of the individual we are discussing. The race began in Miocene time; this individual lived in the quaternary age, and well up into the soil-making period. There is little if any differentiation of the molars. The cusps, or teats, on the crown are high and prominent, although I think it must have been one of the very last of its tribe. Though the race came before those great castors now extinct, this individual was contemporary with the existing beaver, and doubtless with the aboriginal man.

"It is singular that in the present controversy respecting the subsidence of a part of the eastern coast-line of the United States, I have never seen the testimony of the mastodon put in evidence. As already said, this animal has run through a long stretch of geologic time. I saw a tusk taken from the Trenton gravels of New Jersey which belong to the ice age, or glacial epoch. I have part of a tusk taken from the shore in Monmouth county, New Jersey, after a storm. This storm from the sea had washed away the drift which covered an ancient swamp, in which this relic, with other bones, had been entombed. But that swamp had been far inland, sufficient for a depression to exist far enough away from the action of the sea to enable it to support a non-marine, sub-aquatic vegetation. The subsidence had allowed the sea to come up and uncover that creature's grave. Last summer, at Long Branch, I saw a fine mastodon's tooth which was taken up by fishermen out at sea. I have also some fragments of a mastodon's tooth, besides

an almost entire one of remarkable size. * * * *
 It was given me as coming from Long Branch, where it was obtained so long ago that its history was forgotten. I detected upon it the microscopic skeletons of marine *bryozoa*, the same species that I have often found on the shells of our modern oysters. This tiny animal can only attach itself to a clean anchorage in the clear sea-water. Hence this tooth was evidently got from the sea; and, more, its old grave of mud or peat was long ago invaded by the sea and churned up, so as to float it away, leaving the tooth on the clean, sandy ocean-floor.

"So it is plain that the mastodon came into what is now New Jersey ere the ice-sheet began. It receded south before it. It followed the thawing northward, and so again possessed the land. It occupied this part of the country when its shore-line was miles farther out to sea than it is to-day. Here it was confronted by the human savage, in whom it found more than its match; for, before this autochthonic Nimrod, Behemoth melted away."

The list of mammals known to have lived here at this time is not a long one, but it is suggestive. Leidy has reported the walrus from New Jersey, and Cope states: "The Greenland reindeer was a resident of New Jersey when the walrus was on its shores and when the climate resembled that of its present home." True, except that all the indications favor the view that the climate was not so arctic as at present in the range of the reindeer. The moose, according to Allen, probably "in glacial times inhabited the eastern coast of the United States southward to Virginia." Mr. Volk has found one bone, referred by competent authority to the musk-ox. The seal still wanders up the river, and doubtless, centuries ago was a common feature of the river's icy waters. Surely the land was ripe for human occupation, and it would be far more strange if it

could be proved that it was not so occupied, than is the offered demonstration that palæolithic man shared the region with these creatures. The conditions were more favorable here, then, than now confront the boreal race of the continent, the Eskimo.

The relation of this arctic race to the historic Indian has been much discussed, and it was to be hoped that the exhaustive explorations of the gravels about Trenton, by Mr. Volk, would bring to light crania that would settle the question for all time, but such skulls as have been found under conditions indicative of vast antiquity (but three in number, so far as I am aware) do not bear out the Eskimo theory. Dr. Hrdlicka states them—two of them—to be southern rather than northern in type, the other not separable from the Indian.

Notwithstanding this discouraging result, the question remains a prominent one, and the literature of the subject is too extensive to be ignored. I will return to this discussion on a subsequent page.

THE PRE-INDIAN IMPLEMENTS.

Whether, with the subject as presented, the reader looks favorably or not upon the solution of the riddle of the rude implements to which I have applied the term "palæolithic," the archæologist stands on a firmer footing and need be less apologetic when treating of that other phase of the subject, that of the practically exclusive use of argillite and the evidence of this use ante-dating that of quartz, jasper and the allied silicious materials.

To the assumed—I think, demonstrated—palæolithic man, this mineral was as iron to us, his main dependence. Not that he knew nothing of the availability of other and

even better adapted material, but no other material more fully met the requirements of his limited needs. Time, however, wrought its changes then, as it does now. There was slowly brought about such alterations of climate as affected him vitally. Of greatest moment was the gradual cessation of strictly glacial activity and the river began to wear something the appearance that it now has when at a freshet stage. Change the environment and the habit changes. This is a fixed law of Nature. Man's habits changed. The "palæolithic" implement, tool or weapon, as the case might be, came to be looked upon as we look now upon the pre-historic bronzes of our remote predecessors. The new conditions had made new men of the descendants of their ancestors of the Ice Age. They aspired to better armature and, can we doubt, the change of the fauna and increasing wariness of game made such change in hunting implements imperative. It is still possible to drive a nail with a stone, but we prefer a hammer. With this specialization of implements came the necessity for more careful inspection of the unworked material and the source of the original supply as boulders and pebbles was found up the river valley, some twenty miles above tide water.¹ Naturally it became a place of importance, and how important is evident from the traces still remaining of the implement-making industry. It clearly foreshadowed the steel trust of today.

That the entire output of argillite objects, large and small, and of every pattern, should be referred to so important a manufacturing centre as about Point Pleasant, is not more strange, perhaps, than that we now think of Pittsburgh or Bethlehem when we see some vast construction of iron; but

¹ H. C. Mercer : various papers by, in Proc. A. A. A. S., 1892, 1893; "Science," June, 1893; Amer. Nat., 1893; Publications, Univ. Pa. VI., 1897.

not all manufactured metal comes from these points. Early in our career as a nation, down in the "Pines" of southern New Jersey, iron was gotten from bog ore there and made available with charcoal as fuel. So, precisely, long before the American stone age man discovered Point Pleasant and the argillite out-crop, he had a supply of this material, equal to his needs, in the boulders scattered not only in the immediate valley of the river but over the surface of the land that was habitable, when the river itself was yet choked with ice.

The locality has been frequently visited and much written of, but this literature has largely the defect of being prepared for a purpose, that of modernizing the arrival of man in the region. It is clearly evident that no archæological survey of a limited area is sufficient to warrant a comprehensive conclusion. This fact has not been recognized, and while the various papers treating of the region are marked by accurate description, the inferences drawn that because palæolithic-like objects—mostly "rejects"—are found here, the isolated and older weather-worn and water-worn objects of superficially like appearance of the tide-water region, are identical in age and origin—all this is quite unwarranted. Under a walnut tree, not long ago, I found a slab of stone and battered pebbles that had been used in ridding a great heap of nuts of their hulls. The abraded surfaces were precisely such as are seen on every "hammer" found on an Indian village site. Ergo, the battered pebbles are nothing earlier, at most, than colonial occupation. This fairly represents the "logic" of the conclusions reached by some who have given the argillite out-crop close attention. Close, surely, considering the details given, but not close enough. The locality is clearly one with the more specialized argillite man, traces of whom are found unequivocally associated with the gravel-capping sands that overspread the Trenton gravel throughout much of its extent.

At the argillite out-crop we have, as I have seen demonstrated by excavation on two occasions, evidence of industry when argillite was solely in demand, and here there was always a commingling of the rudest with the most elaborate form of implement. They could not be dissociated in any way, and clearly, under such circumstances, any object that bore resemblance to a palæolith was necessarily a rejected blocking out of something of more definite character. This is significant and more so that chips of all sizes outnumber finished objects, hundreds to one. Now, this is not applicable to argillite as distributed throughout the river valley's tide-water extent. The conditions there, differ absolutely.

Again, and of equal importance is the fact that nearer the present surface of the same locality, where the greatest variation of forms of small implements, arrow-heads, drills, scrapers and knives occur, pottery is also present and points of jasper and quartz. The introduction of these silicious materials for weapons and implements did not cause the abandonment of argillite. Steel forks and pewter spoons are still to be bought at hardware shops. The man here in the Delaware valley, undertermined centuries ago simply passed from the argillite to the quartz age, but no more discarded the former mineral for the latter than do we, in our iron age, give up the use of copper. The argillite out-crop in the river valley nearest to the tide-water region is post-palæolithic, but at its incipency, pre-Indian, if by the term "Indian" we mean the advanced savage of the day of the continent's discovery by the Norsemen or later, by Columbus.

Returning to a consideration of the territory, where tidal-action occurs, the omnipresent argillite arrow-point is suggestive in other lines. We are not, here, concerned so much with the origin of the mineral as with the object itself. The extreme degrees of decomposition, that we now find,

does not occur at the mineral's outcrop. Supposing it to have been abandoned about three centuries ago—certainly, not later—that lapse of time has not sufficed to weather the specimens left there to any such degree as we find on the fields extending across the State from Trenton to Cape May. Many an isolated arrow-point, as now found, preserves its shape but has small hold upon its original value as a weapon. Not only its surface but almost to its heart, it is reduced to the consistency of chalk. A core alone remains by which, in many cases, we can trace it back to the argillite in place, a hundred miles or more, away. Not all argillite is the same in consistency. Its chemical make-up varies a good deal. The elements attack it in different ways, and while the greater number are uniformly decomposed, others are pitted or honey-combed, the carbonic acid in rain water having eaten out every trace of lime; and still others are not only weathered to the point of non-recognition as artifacts except by the aid of a graded series, but are encrusted with limonite, itself a condition that indicates a greater age for the argillite points than those made of jasper or quartz, as these have as yet escaped such incrustation. I have examined thousands and tens of thousands of arrow-points of all materials ever used and have never, here, in New Jersey, found any with limonitic incrustation, except those of argillite. This does not arise from any peculiarity of the mineral inviting such incrustation, for pebbles of every kind known to the Trenton gravels show marks of it, but never, I hold, a quartz or jasper arrow-point but is as clean and sharp to-day as when it was chipped.

Fortunately for the interests of archaeological research, there yet remain areas that have been undisturbed since the days of the Indian. Forests have flourished and decayed and grown again; the tide has ebbed and flowed through

many a marsh; upland swamps escaped the desolating hand of Improvement; not every acre converted into a smiling field, but wearing, rather, a sardonic grin. Nature can tell her own story when given half a chance, and man figures in it, here, in the sands of South Jersey. He is one of the many illustrations that illumine her pages; not in the same chapter with her fossil shells and bones, but nearer to some of the latter than geologists have been willing to admit.

Rambling, in search of relics, over the country and looking for them, not on ploughed fields or wasting sand banks, but where the chance of success is most remote, it sometimes happens that an arrow-point is found, or some larger chipped implement of unknown use. The question of its origin instantly arises, but in such a case, we can only refer it to chance and so know nothing more than before we picked it up. This is true of one or a few such discoveries, but, retaining the objects we find, after years of such searching, we find that a light is thrown over a series that failed to be detected when it fell on one alone.

These isolated objects are scattered fairly evenly and often occur where, under present conditions, man could not have lived, and it is safe to assert, so far as the tide-water region of New Jersey is concerned, that the scattered relics are fully ninety-five per cent. of argillite. Surely, there is significance in this.

Again, taking all the relics that have been gathered from the same area, I believe it will be found that those of argillite so largely outnumber those of other material that the proportion is suggestive of the jasper and quartz figuring as the proverbial exception to the rule. The latter are the gatherings from village sites and burials; the former are found, as are the pebbles, as if broadcasted by Nature and not through man's agency. This means that argillite man preceded the chipper of flint, and this in turn does not mean that

former was simply the grandfather of the latter. There is no such scattering of the relics of the historic Indian over the entire surface of the southern counties of the State as there is of these rude argillite flakes and knives, and many, if not most, now so weather-worn that many have passed the stage of absolute certainty of recognition.

Based on an estimate of thousands of relics of the historic Indian in every county of the State, which is quite within bounds, what of the tens of thousands of the older implements of argillite? Is it not inconsistent with the assumption, seriously set forth, that an estimate can be made in years of when man first pressed foot on the soil of New Jersey?

If then, the evidence points to what I have suggested as a Pre-Indian people, who were they and what their relation to the historic Indian? If we had as firm ground to stand on as is our confidence when given to taking a stand on the question, light might, ere this, have been thrown on the subject. The problem of the most ancient man in America is complex, and probably the conclusions finally reached on the Pacific coast, in mid-continental regions and along our Atlantic seaboard, will not be quite the same, beyond the fact that the invasion of the continent by man is a subject within the scope of geological research.

Granting the one-time existence of palæolithic man, we can only wonder from whence he came, so firmly convinced are geologists that the parental stock was no strictly American mammal. However, given time enough, anything within the bounds of reason can occur, and there is immensely more time in the past than has elapsed since the first of the Lenni Lenâpè saw the Delaware and it is a most reasonable conclusion that wild beasts had not this great section of the earth's land surface all to themselves. Accepting as the simplest and probably safest conclusion that

the pre-Indian, argillite man of the glacial sands was a descendant of palæolithic man, to what known race can we liken him? We most naturally think of the existing Eskimo, and surely it is a tempting theory to see in them a survival of that ancient race of the Delaware valley. A great deal has been written in years past, favoring this view, and it is of such weight that it should not be forgotten when the results of later archæologists are presented.

A forcible objection that has been urged against the assumption, as it was held to be, of a pre-Indian occupancy of the Atlantic seaboard, is the difficulty of realizing that a people sufficiently advanced to make so well-designed a weapon as the argillite spear-head should not have utilized stone in various other ways to meet their wants, precisely as the Indian did subsequently. No other form of implement than these spear-heads was clearly associated with them, except when found on the surface, and so not clearly separable from the true Indian implements associated therewith. Recently, the occurrence of a stone hammer, traces of fire—charcoal—and a flat stone bearing marks of a hammer or rubbing-stone, at a depth of nearly three feet below the surface, has rendered it quite probable that a proportion of the surface-formed relics of these patterns should be regarded as of other than Indian origin. If we examine a series of the stone implements of the only other American race—the Esquimaux—we will find that not only is the variation in pattern very considerable, but that precisely such forms of domestic implements as are now in use in the Arctic regions, among the Chukches, are common “relics” in New Jersey. In his recent volume of Arctic explorations, Professor Nordenskiöld describes a series of stone hammers and a stone anvil, which are used together for crushing bones.¹ Every considerable collection of stone

¹ “Voyage of the Vega,” New York, 1882, p. 483.

implements gathered along our sea-board, anywhere from Maine to Maryland, contains numbers of identical objects.

While many of these hammers and mortars are unquestionably of Indian origin, no valid reason can be urged that a proportion of them are not of the same origin as the argillite spear-heads. Indeed, grooved stone hammers have been found quite deeply imbedded in the sand—as deep as the usual depth at which argillite arrow-points occur; but this, of itself, is scarcely significant. So unstable is the surface of the earth where sand prevails, that the actual position, when found, of any single specimen, is of little importance. It is only when thousands have been gathered with great care, and under the most favorable circumstances, that any inferences may be drawn. This is true of the argillite arrow-heads, of which thousands have been gathered, and presumably true of the hammers and mortars, because such implements are common among an American race which uses also such spear-points as are so abundant in New Jersey. The similarity between a Chukche spear-point figured by Nordenskiöld¹ and an Esquimau spear figured by Lubbock² and the New Jersey specimens is very striking. Of course, such similarity may be considered as mere coincidence, but that it has an important bearing on the question becomes evident when the many circumstances suggestive of a pre-Indian race on the Atlantic sea-board are collectively considered. Singly, any fact may be held to be of little or no value; but when many of like significance are gathered together, they are self-supporting, and the one central fact becomes established.

Basing the supposition that palæolithic man was not the ancestor of the American Indian, because there is evidence warranting the belief that “the Indian was a late comer

¹ *Ibid.*, p. 571.

² “Primitive Industry,” chapter xxxi, p. 453, Salem, Massachusetts, 1881.

upon the extreme eastern border of North America—indeed, the oldest distribution of the American races does not antedate the tenth century,” and therefore “the appearance of the Skrælling (Esquimaux) in the Sagas, instead of the Indian, is precisely what the truth required”¹—basing the supposition thereupon, it was suggested² that in the Esquimaux we should find the descendants of that oldest of all mankind—*homo palæolithicus*.

Having given the strictly archaeological reasons for dissociating certain of the stone implements found in New Jersey, let us now briefly refer to the historical evidence bearing upon this question. Have we any references to Esquimaux dwelling in regions significantly south of their present habitat? If there are such, then it is at once evident that the weapons and domestic implements of such people must now be buried in the dust of their ancient southern dwelling-places, and, these same spots being subsequently tenanted by the Indian, his handiwork must also be mingled with that of his predecessors.

The literature of this subject can be sufficiently outlined by reference to two authors. Major W. H. Dall, in “Tribes of the Extreme Northwest,”³ remarks: “There are many facts in American ethnology which tend to show that originally the Innuït of the east coast had much the same distribution as the walrus, namely, as far south as New Jersey.” I submit the rude argillite arrow-heads found in certain localities in such abundance, and at a significant depth, as an additional fact, tending in the same direction.

¹ “Popular Science Monthly,” vol. xviii, No. 1, p. 38, November, 1880, New York.

² “Peabody Museum Report,” vol. ii, p. 252, Cambridge, Massachusetts.

³ “Contributions to North American Ethnology,” vol. i, p. 98, Washington, 1877.

In B. F. De Costa's admirable résumé of Icelandic literature¹ there is given abundant evidence—ay, proof—that the people dwelling along the coast of Massachusetts, 900 to 1000 A. D., were not the same race that resisted the English on the same coast six centuries later. The descriptions of the people seen by the Northmen show that, of whatever race, they were well advanced in the art of war, and used not only the bow, but hatchets and the sling. They were “men of short stature, bushy hair, rude, fierce, and devoid of every grace.”²

It need, therefore, only be remembered that the relationship between the true palæolithic implements and those of more advanced finish and design is evident to every one who carefully examines a complete series. At the same time, the student is confronted with reliable historical evidence of the occupancy of the Atlantic sea-board by the Esquimaux as far south as New Jersey.

Does not the impression derived from strictly archæological studies, that all the stone implements of our eastern sea-board are not of one origin, go far to confirm the position of the historical student that an earlier race than the Indian once resided here?

De Costa remarks: “During the eleventh century the red-man lived upon the North American Continent, while the eastern border of his territory could not have been situated far away from the Atlantic coast. In New England he must have succeeded the people known as Skräellings. Prior to that time, his hunting-grounds lay toward the interior of the continent. In course of time, however, he came into collision with the ruder people on the Atlantic coast, the *descendants of an almost amphibious glacial man.*”

This “amphibious glacial man,” I submit, is he who

¹ “Pre-Columbian Discovery of America,” Albany, 1868.

² “Popular Science Monthly,” November, 1880, p. 38, New York.

fashioned the rude paleolithic implements, that, with bones of extinct and Arctic mammalia, are now found in the glacial drift of our river-valleys; and his "descendants," a rude people, with whom the Indian finally came in contact, were those who fashioned the plainly finished argillite arrow-heads and spears that are now, in part, commingled with the elaborate workmanship of the latest race, save one, that has peopled this continent.

The above eleven paragraphs, written more than twenty years ago, expressed my views then and substantially do to-day, but I am not so much inclined to the "Eskimo" feature of it. As already mentioned, such crania as have been discovered do not point in that direction, and possibly to craniology we shall have to look, for a final solution of the problem.

THE HISTORIC INDIAN.

The celebrated Swedish naturalist, Peter Kalm, traveled throughout Central and Southern New Jersey in 1748-'50, and in his description of the country remarks:¹ "We find great woods here, but, when the trees in them have stood a hundred and fifty or a hundred and eighty years, they are either rotting within, or losing their crown, or their wood becomes quite soft, or their roots are no longer able to draw in sufficient nourishment, or they die from some other cause. Therefore, when storms blow, which sometimes happens here, the trees are broke off either just above the root, or in the middle or at the summit. Several trees are likewise torn out with their roots by the power of the winds.

* * * In this manner, the old trees die away continually, and are succeeded by a younger generation. Those which are thrown down lie on the ground and putrefy, sooner or

¹ Travels into North America, by Peter Kalm, London, 1771, vol. ii, p. 18.

later, and by that means increase *the black soil*, into which the leaves are likewise finally changed, which drop abundantly in autumn, are blown about by the winds for some time, but are heaped up and lie on both sides of the trees which are fallen down. It requires several years before a tree is entirely reduced to dust."

This quotation from Kalm has a direct bearing on that which follows. It is clear how, to a great extent, the surface-soil was formed during the occupancy of the country by the historic Indians. The entire area of the State was covered with a dense forest, which, century after century, was increasing the *black soil* to which Kalm refers. If, now, an opportunity offers to examine a section of virgin soil and underlying strata, as occasionally happens on the bluffs facing the river, the limit in depth of this black soil may be approximately determined. Microscopical examination of it enables one to determine the depth more accurately.

An average, derived from several such sections, leads me to infer that the depth is not over one foot, and the proportion of vegetable matter increases as the surface is approached. Of this depth of superficial soil probably not over one-half has been derived from decomposition of vegetable growths. Indeed, experiment would indicate that the rotting of tree-roots yields no appreciable amount of matter. While no positive data are determinable in this matter, beyond the naked fact that rotting trees increase the bulk of top-soil, one archæological fact we do derive, which is, that the *flint implements* known as Indian relics belong to this superficial or "black soil," as Kalm terms it. Abundantly are they found near the surface; more sparingly the deeper we go; while below the base of this deposit of soil, at an average depth of about two feet, the *argillite* implements occur. This is the condition in the

immediate valley of the Delaware and along the in-flowing streams, where, in every case, there was a deciduous forest, but inland, where pines only grew, and the "soil" was replaced by sand, there the surface contains both argillite and jasper, but what are the real conditions? The jasper and quartz are essentially confined to the vicinity of the water courses, while the argillite is scattered everywhere, without reference to any physical condition that now obtains. This can scarcely be an accidental happening.

The examination of many a so-called "village site," but what was probably but two or three wigwams with a single cooking-place in common, has shown that while argillite occurs, it is apt to be but a small proportion of it, and not unfrequently it is entirely absent. I have explored exhaustively more than one such site, and not found a trace of any other than silicious material, and not always where the finest examples of handicraft occurred. On the other hand, it not unfrequently happens that an area of an acre or more of sand, nearly devoid of vegetation and exposed for years to rain and wind until it is now a plain that has every appearance of having been a hillock or a ridge, and here argillite will be found exclusively. Surely this suggests the use of that material prior to jasper and quartz, for we know positively these were in use last or just previous to European contact and the introduction of fire-arms. Argillite, it is true, was never discarded, but it was not likely to have been used exclusively by certain groups of Indians while others made use only of silicious stone. That would indicate such a class distinction as we now have, but was certainly unknown in Indian time.

Tabulating a series of "finds" along the Delaware river's immediate shore and inland for a distance of a mile or more, it was found that in proportion as jasper and quartz were abundant, there was also the finer grades of pottery, and

where the whole range of worked stone was present there was a comparative absence of argillite objects, except the broad blades, probably used as agricultural implements; but where argillite arrow-points and knives are very abundant—hundreds of them—there was little else and only the rudest pottery. This was determined to be the rule after years of examinations of thousands of acres of land. As might be expected, there are some notable exceptions. I am not, however, disposed to look upon them as a serious objection to the view I have expressed. In archæology as elsewhere, insuperable difficulties as they seem to be, constantly arise, but it is lack of comprehensiveness of knowledge that magnifies and makes over-much of trifling matters. Place a sixpence near enough your eye and you can blot out the world. Many do this and argue accordingly. There are notable instances of the commingling of the rudest and most elaborate of Indian handiwork, a commingling that makes any attempt at dissociation apparently hopeless, but this arises from taking only a superficial view of the condition. The general character of the locality must be carefully considered. If it is one eminently desirable for habitation and has been so, if we may judge from what now is found, since early post-glacial or even in strictly glacial time, then its supposed continued occupation for centuries after centuries need excite no wonder, and the traces, as claimed, of occupation by an earlier and later people would necessarily gradually accumulate, just as almost all the cities of importance along our inland rivers and many coast-wise towns were originally Indian villages. The features that attracted the colonists were quite the same as those that influenced the Indian.

There is another view to be taken. By trenching an Indian village site, where the present surface presents a hopeless commingling of jasper and argillite, the story of the

earlier or argillite period is told so plainly that no doubt can be entertained thereafter. We know how true this is of ancient cities in the so-called civilized world, and the application of it can be made here with just as good a reason and assurance of as tangible results.

Again, we cannot escape erroneous impression, if we do not, when in the field, consider the changes effected during the last three centuries; those wrought since the advent of the European settler. The Indian let well enough alone. He scarred the face of the earth but little. His scattered fields were not of vast extent and natural plains were cultivated. Extensive clearings of the forest were not undertaken, and when fires occurred, Nature repaired the damage in her own time and way. The Indian, in short, kept in touch with Nature just as closely as the European persistently holds her at arm's length and delights in destroying her choicest work. Could an archæologist have visited the valley of the Delaware in advance of the destroying hordes that have blighted it now more effectually than ever locusts swept a western plain, he could have turned the later pages of the earth history here and made for us clear as noon-day much that now is dark as night. They were not torn then nor displaced, but lay, one upon the other, in proper position. Now, there are but the veriest fragments left, and it is an almost hopeless task to piece them together and be able, here and there, to read a little. What, I submit, has been read, and about which there is small room for discussion, is that so long ago that even dreamy tradition has framed no fabulous story of a simple fact, man appeared upon the scene, and from that distant day until now his presence has not been wanting.

It is scarcely necessary to continue with illustrative examples showing the changes since maximum glacial activity that have occurred. We have, if my own field work—and

that of Mr. Volk—has not grossly misled me, both an earlier and later argillite horizon—the palæolithic and the pre-Indian. It is analogous possibly to the traces of man in the loess of Kansas and Nebraska.

[Since these pages were written, my attention has been called to an article on Nebraska's ancient (?) man in the *Century Magazine* for January, 1907, by Prof. H. F.

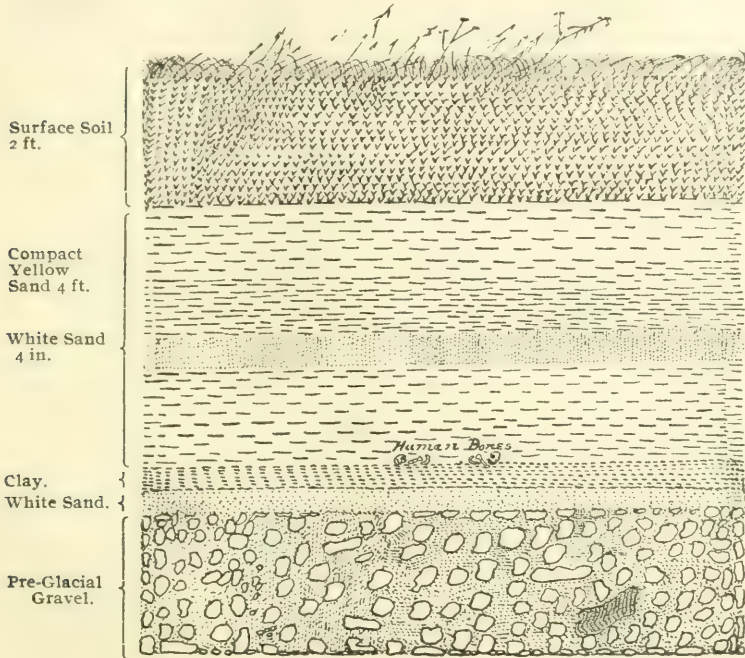


Fig. 1. Human bones beneath stratified deposits, discovered by E. Volk, 1899. (See also Hrdlicka on Trenton Crania. *Bul. Amer. Mus. Nat Hist.* vol. xvi, pp. 23-62, 1902.)

Osborne. The author raises our hopes, at the outset, that here we have something definite, at last, but we conclude the perusal, finding ourselves precisely where we started, in the dark.

A foot-note, however, it seems to me, is somewhat suggestive. Prof Osborne calls therein attention to the fact that Mr. Holmes suggests the Nebraskan finds as of the Blackfeet Indian type of cranium. If the crania of the North American Indians have developed into "types" and the skull of a Delaware can be distinguished from that of an Iroquois, and those of Canada from those of Texas, has not the Indian been on the continent a long time that such differentiation should have been brought about? Is evolution such a rapid process that bones can be so readily affected? It can be understood that soft tissues may be influenced promptly, comparatively speaking, by change of environment, but is this equally true of the bony framework? Would evolution be as likely to affect a bone, because the demands made upon it varied a little? It is always possible to hang a new hat on an old peg, and we generally do so. Why may not Nature have much the same old fashioned way of doing things? But competent craniologists accept the "types" of skulls as demonstrable, and must it not have been a very long time since the changes became established, and a longer one before the change commenced and during it? A fact (?) like this establishes the antiquity of man in North America as distinctly, as unequivocally, as the dispersion of his artifacts throughout the surface soils and their less frequent occurrence in the under-lying gravel.]

Further exploration, I do not anticipate, will lead to reaching any other conclusion, and leaving these phases of the subject, what now of the antiquity of the historic Indians?

INDIAN LEGENDS.

Legend, as the Walum Olam; inscribed tablets, as the Lenâpè stone and the wild guesses of the closest student, have led to as many views of the origin and antiquity of the Delaware Indian as there have been those who have paid any attention to his existence, and their name is Legion.

The Walum Olam has been translated, but far too much importance is placed upon it as accurate history. Legend, based upon facts, the particulars of which have been long forgotten, lost all sense of number, as applied to years. "Once upon a time," as in our fairy tales, should be the opening words of the Walum Olam. It records a migration, but does not specify the length of time required to accomplish it. Names, apparently of individuals, may as reasonably be looked upon as groups of individuals or as dynasties.¹

The mysterious, all comprehensive, encyclopedic Lenâpè stone, with its mastodon, the lightning's stroke, the tragic end of man and beast and various symbols of we know not what, is, if all else of Indian handiwork is considered, far beyond the skill of an aboriginal artist. The specimen has been, most wisely, relegated to the limbo of obscurity. All evidence, centering in the stone itself, points to its fraudulent character.

It is known that the Indian was in possession when the European adventurers came, with their fair assertions and with foul intent. This is all *we know*, perhaps, and it may be, all the rest is *speculation*. But, in less than three centuries, much colonial history has become vague. The sharp outlines of the facts have been worn away in passing through the minds of generations and it is not, probably, at all unreasonable to hold that a broken stone or a fragment of a shell speaks with greater accuracy than the so-called history that remains to us. A potsherd lying in the soil, to-day, speaks as unmistakably of the one-time presence of

¹ Certainly nothing can be more unfortunate than for the archæologist to turn genealogist and so closely reckon the past as to reach the conclusion that the Delaware Indian came into this valley some four or five hundred years ago. Absurdity can go no further. Caution should be exercised in the ascription of antiquity, but not to such extent.

an intelligent man, as a marine shell embedded in solid rock is eloquent of an ancient sea.

It is a legitimate question that one asks: for how long a time was the Indian in possession? As he did not know, and when questioned could give no reply that was at all helpful to the earlier seekers for information, it follows, logically, that our only resource is such traces of himself as remain, comprehensively considered. "Indian relics," as we gather them from the surfaces of newly-ploughed fields, suggest time past, but not antiquity. They lead us little farther back than the English coppers and colonial coins with which they are associated. The circumstances of the occurrence must be more definite than accidental bringing to the light when fields are cultivated. Fortunately such conditions are available when field-work is systematically undertaken. Quite as prominently as hunting and fishing, agriculture and war entered into the lives of the Delaware Indians, did the fictile art. They were potters, too, of no mean skill. To-day, nothing indicative of the Indian is more widely scattered than potsherds. Curiously enough, I have found them when the most careful search resulted in finding nothing more. The ware was not a mere moulding of raw clay. I demonstrated this, some years ago, by testing samples in our modern porcelain kilns. It was shown that the material had been so prepared that it resisted shrinkage or distortion under an intense heat; one far higher than the Indian potter could command.

And here, the question at once arises, whether the Indian is an immigrant, who forcibly displaced a predecessor, absorbed another race or found an unoccupied but once inhabited country, and however coming, did he bring a knowledge of pottery with him? Here we are groping where there is lack of light, but the comprehensive consideration of the subject, for which I have contended,

throws, I think, a ray of light into the Cimmerian darkness, and the impression is born, if it does not wax very strong, that the art of pottery making was unknown in pre-Indian time or very rudely practiced, and that the Indian was not an accomplished potter when he began his career in this region.

Be all this as it may, whenever we find traces of man that include potsherds; prior, of course to European colonization, we may feel assured that we have to do with the Lenni Lenâpè or Delaware Indians. When such traces of early man are not so associated, we may have evidence of inhabitation here of a pre-pottery age. It is scarcely necessary to add, no trace of pottery ever occurs in the glacial gravel or those earliest of post-glacial deposits, of sand, small pebbles and an occasional boulder.

THE INDIAN VILLAGE.

What I have recognized as a "village site" is such evidence of continued occupation as baked and charcoal-charged earth, due to the presence of fire on one well defined spot for a considerable period; an abundance of heat-cracked pebbles, showing that hot stones were used to bring water to the boiling point; often a distinctly paved hearth; potsherds innumerable; bones, often charred, of animals used as food—including human (?) bones; many broken implements of stone and some of bone; and often, implements that appear to have been lost, forgotten when a moving took place or were discarded for like objects of better design or finish. Usually we find one and often two or three hand mills or querns for crushing maize, seeds and nuts, their Tachquahoakan, and in some instances the upper as well as lower stone is found.

Under peculiarly favorable circumstances, there can be traced with some slight degree of convincement, the precise wigwam sites surrounding the fire-place, but this latter is not always the centre of a circle. A good deal depended upon the "lay of the land" and occasionally it appeared as if a protected fire and oven was used rather than an open one, with pots in the embers and hot ashes. It happens, also, that we sometimes find traces of a long-continued fire, with bushels of heat-cracked pebbles and not another trace of man's one-time presence. Here, it is probable, pottery was baked, and we have in these traces all that remains of an Indian's primitive kiln, though what part was played by the burnt pebbles, I do not see at all clearly. Again, we may find pottery and a few arrow-points and two or three stone drills and scrapers. If the ground shows no discoloration or alteration of texture, such as fire produces, the occupancy of the spot was likely but temporary. On the other hand, mills or querns are often found, often weighing from thirty to fifty pounds, without any trace of other object of human interest near them. If a "village" once existed, every vestige has been removed. I suggest that these were permanent querns and, when in use, were surrounded by nut-bearing trees, the fruit of which was gathered in season and carried to the "village" nearest by.

It quite frequently happens that a single form of implement will be found in large numbers and in such close association that the suggestion of burial for purpose of temporary concealment arises. Such a cache, if scattered by the plough, gives in time the appearance of a village site, by reason of the abundance of the objects now scattered over a considerable area, but the absence of potsherds shows that the objects found are not evidence of a one-time dwelling site or even a period of transient occupation. When an abundance of arrow-points and spear-heads, and no other

form of stone implement associated with them, occur on a comparatively limited area, the impression of a battle having been fought naturally, perhaps, occurs to the collector; but no unmistakable trace of a pre-historic battle-field was ever discovered or is likely to be. Certainly, we have no record—now historic—of any Lenâpean Napoleon who on the sandy plains of South Jersey met his Waterloo. The single arrow-point that we now find as we ramble about the fields was more likely to have been shot at a deer than at a human foe, and large numbers in a little space more than probable is but the dispersion of a cache, begun when the plough first up-turned the sod and has continued ever since. Battle, murder and sudden death were no doubt common enough, but all this is but inferential, based upon the knowledge we now have of savage life, but this state of affairs once obtaining, does not call for elaborate battle-fields that we can now trace. The palæontologist can build up an animal from a single bone, but from a single arrow-point to elaborate a tragedy is not the province of a practical archæologist.

If the village site, as positively determined, was a feature of the present surface, it might be said of them, that they were occupied and abandoned at or near the date of the arrival of the European settler, but such is far from being true of them. They occur, distinctly, under such a variety of conditions that they establish a range in time of vast significance. Some are so deeply buried that changes have taken place since their abandonment which required a long series of years to accomplish. Others again have been abandoned and re-occupied, and a layer of undisturbed soil, gradually accumulated, lies between the relics of the earlier and the later occupation. More significant, perhaps, than all else, is the abundant evidence of protracted occupation in situations that are now wholly uninhabitable. Beauti-

fully illustrative of this, are the village sites in the present low-lying meadow land along the river, and which is subject to overflow at any time; a heavy rain, even, bringing the river to a freshet stage. These meadows are now but five feet above high-water mark. Digging to that depth or even less, in some places, we come to water and find also ashes, charcoal, pottery, implements in abundance and the bones of animals used as food. All we find, at the horizon of the water and below it, goes to show that the village site was one long and continuously occupied, and very marked must have been the physical changes to have rendered the place uninhabitable, as it now is, and to account for the accumulation of from three to five feet of alluvium that now covers it. Nothing was buried, but all gradually inhumed. The assertion that the spot was temporarily occupied and abandoned at short notice and re-occupied when conditions again became favorable, is but another example of that gross ignorance of the real conditions which, as when treating of palæolithic man in the same region, characterizes its author. Archæological impressions should never be based on a single discovery, but too often attempt is made to balance a cannon ball on gossamer. Those who oppose all evidences of antiquity deliberately blind themselves and then insist that no one can see. To preserve the slightest semblance of consistency, they are forced to do so.

No upland village site, of which I have any knowledge, has proved so fruitful of evidence of advance in savage life as those of this meadow tract, so exhaustively and scientifically explored by Mr. Volk. They exhibit the Indian at the high-water mark of his career and certainly such a people would never have dwelt on so unsanitary a spot as it now is and from which they were constantly likely to be driven by a rise in the river. Especially unlikely is the choosing of such a location, if then as now, when not a

thousand yards distant they could have built their homes at an ideal spot, fifty feet above the river and with an outlook that commanded a wide reach of the river valley. Unquestionably, when the pottery-using, flint-chipping Indian came to dwell here, the river, comparing that time with the present, was not the same; the meadows were not as they are now, the creek near by—now nearly silted up—that then flowed directly into the river, was quite another stream. Just what the changes have been or how brought about, is for the geologist to decide, but vast changes there have been, and Mr. Volk's view that the village site he unearthed was one of significant antiquity cannot be successfully contradicted.

The purely gratuitous assumption of Mr. Holmes that because one piece of pottery found by Mr. Volk was decorated after the manner of Shawnee fictile ware, that such pottery dated from the almost historic period of the Shawnee settlements along the Delaware, has no bearing whatever on the antiquity of the site. The fact is, the ornamentation of pottery as made here was so indefinitely varied and at times truly artistic, that near approaches to the specimen found by Mr. Volk are not unknown and that one vessel might readily have been designed and decorated by a Delaware who had never seen or perhaps heard of a Shawnee.

Inter-tribal commerce, too, must be taken into account. Considering that I have discovered Catlinite pipes and beads, that must have come from Minnesota, and obsidian arrow-points, flakes and scrapers that either came from Utah or Oregon, and that many a southern and western form of implement, ornament and pipe has been found hundreds of miles distant from where it was made, it is not at all inconceivable that even pottery, fragile as it is, might have been brought from a distance, or, even a fragment of a vessel, the decoration of which, taking the fancy of a potter here, have been copied.

Nor is this all. The village site was also a place of burial. Now, while the Indians in New Jersey had no one or fixed burial custom, as every archeologist who has worked in the field well knows, it is extremely improbable that one of the methods of disposing of the dead was by immersion. I hold that no better evidence can be had that this meadow tract was practically an upland one, during Indian time and not subject to such frequent and complete overflow, than that it was used for burials as well as a dwelling site. The elevated plateau so near by, to which reference has been made, is full of graves. They may be expected whenever one elects to dig, and no trench of any considerable length but exposes one or more. The accounts of early visitors to this country contain many a notice of burial customs, but none of where the body was placed in water.

It is of first importance, finally, to consider the extent of this village site, the home not of a few but many families and the vast amount of material Mr. Volk and others have recovered from the spot, all of which goes to show that the period of occupation of this river-side and creek-side site was a very protracted and continuous one.

Still another consideration of village sites, and one perhaps of more importance in its bearing on the question of the antiquity of the Indian than all else, is the fact that as yet there has been no strictly argillite village discovered such as I have described as "Indian." All such are characterized by much pottery, by artistically fashioned pipes, jasper and quartz implements, polished stone celts, gorgets, amulets, trinkets for personal adornment and the quern. Argillite implements were always present, but, as we have seen, the use of this material was never abandoned. On the other hand, a village site proper, with its fire-place, hearth, potsherds and argillite implements exclusively, or traces of a single habitation or even a number of them that was

marked only by argillite and no pottery, has not yet been found and I suggest that after an experience of more than thirty years a-field and finding nothing of the kind is evidence of some value, negative though it be, and worthy of attention. I believe such argillite villages never existed. The pre-Indian user of argillite was strictly a nomad and more of a savage than the Indian, and the wider distribution of argillite than quartz and jasper is due to his wandering habit. He appears not, as an "argillite" man and unacquainted with pottery, to have acquired the village habit.

THE INDIAN SHELL-HEAP.

A feature of the archæology of the region herein treated of and more particularly so of the seaboard of the State, parallel to the river valley but fifty miles away, and not unknown to many an inland stream, whether flowing into the Delaware or the Atlantic, is the shell-heap.

The late Dr. Samuel Lockwood, years ago, gave an excellent account of those he had examined with critical care, near Keyport, N. J., and many references have been made to the deposits of shells through man's agency, occurring along the coast wherever the edible molluscs were readily obtained in quantities, but the age of these artificial deposits has been overlooked by recent writers who have essayed so earnestly to modernize the pre-European occupation of the country.

Not one of the very many shell-heaps that I have examined but must be ascribed to the historic Indian, but the beginning of many such shell-heaps was in remotely pre-historic time. Some, indeed, so far as I could determine, contained no trace of pottery, but not one but had quartz and jasper chips and broken implements. Argillite was

often present, but I could never find it exclusively so. Shell-heaps, then, it is fairly safe to presume, are all Indian in origin, but since their beginning, there has been a decided sinking of the shore line and the base of more than one well-defined heap has been found to be at least four or five feet below low-water mark. These heaps were started on what at the time was firm earth and dry earth, for the Indian was no lover of a damp or clayey soil. It is true, the coast has been said to be sinking pretty steadily and, as a geological phenomenon, at no laggard's pace, but we have no evidence that such subsiding has been progressing with no remission. Very true, more than one original light-house stood where now is open sea, but such sinking of the land as the shell-heap hints of, was not a matter of yesterday and enormously farther back in time than loss of shore-line within the memory of man.

We can see, as we stand on one of these ancient shell-heaps, a different country surrounding us, a different fauna prowling in the adjacent forest. We can see the Indian from the main land coming hither for his winter's supply of shell-fish and trudging back again to his forest-hidden home. The teeming past is widely unrolled on such a spot, and nowhere else can we get a better, a more comprehensive view of the Indian's career than by these great heaps of shells that year after year, layer upon layer was builded up, to remain, as they do still, enduring monuments to these wild red men of the woods.

Returning again to the village sites deeply buried now in the present flood-plain of the river, we find, when careful search is instituted, something very nearly akin to a coastwise shell-heap. The mussels—*Unionida*—were not despised as food. Many a considerable layer of the shells, with ashes, charcoal, fire-cracked pebbles and potsherds, is found, and the significance of the distance below the present

surface, at which they occur, must not be overlooked. The turf above them is not the rapid heaping of mud displaced from a nearby point, during a flood. Absolutely no trace of cataclysmic action is to be traced. All goes to show a gradual accumulation of soil, and a new surface formed that covered the shells, and it was in time itself covered, so that many a defined stratum now rests upon the spot where the mussel hunter gathered his harvest from the river or the tributary creek.

There is some evidence of a considerable difference in the ages of these fresh-water heaps of shells, but none are so distinctly old as to lack unmistakable traces of the Indian. All have potsherds, but these, in one instance, on Crosswicks Creek, were so rude and only a few argillite flakes found with them, and the depth of the accumulation of shells, taken together, were eloquent of a past so remote that the Indian himself may be looked upon as a feature of antiquity and not a recent comer. It cannot be objected that the water of the river was, if we go back significantly far, too cold for molluscan life, for deep in the gravel, at an inland point, Mr. Volk and I found a valve of a *Unio* and since then other specimens have occurred in like position.

The shell-heaps on the seacoast point unmistakably to a remote past, and I am not sure that much the same antiquity can be denied the similar deposits in the river valley.

There is still another phase of this feature of the one-time savage life prevailing here. Marine shells are not uncommon at a horizon just below the alluvial deposit, still forming, that now constitutes the immediate flood-plain, where the river is hemmed in by a bluff that permits the highest stages of water only to reach its base. This alluvium is almost as tenacious as clay and sustains an exceedingly rank vegetation and vigorous forest growth. It overlies a nearly white sand and small pebbles, much as the present river bed now is.

Were these shells but few in number, we might well conclude that they had been brought hither by the Indians when returning from the coast, or some point on the bay shore, more than one hundred miles down the river, but these shells are too abundant and the species too varied and many too small to be of value as implements or as food. Their presence rather suggests that the salt water reached, in at least earliest Indian times, as far as now the tide extends. If so, a marked change, indeed, has taken place in the levels of land and water, and all since palæolithic—and his immediate successor, pre-Indian—man had passed away. We need not wonder at the antiquity of the Indian, but may marvel, indeed, that any one should question it. With these marine shells are potsherds, arrow-points and charred bones of deer, bear, and other mammals and many fishes.

THE OBLITERATED BROOKS.

The fields are far from level on the plateau that parallels the river on its eastern side. They have for centuries, as fields, been subjected to the wear and tear of innumerable intersecting brooks and by many considerable streams that flow directly into the river. The result has been to create broad valleys like those of Crosswicks and Assunpink Creeks. These have their Indian village sites scattered for miles along the immediate banks of the streams. A far less prominent feature of the land, as it is to-day, is the spring brook, seemingly now as it has ever been; but this is an error. The brook may prove of much archæological significance, when we come to trace the country's history back to pre-colonial times. Some of these small brooks are extraordinarily tortuous and several miles in length. The slight depression in the surface along their course is so inconspicuous that we scarcely notice it, until at length, it nears the face of the bluff facing the river valley. Here the brook bank becomes precipitous and the stream at last enters the

flood-plain of the river through a short but deep ravine, having worn its way down to near tide level from the plateau's surface, fifty to one hundred feet above it.

As simple brooks, these little water courses would not figure importantly in Indian history, but it would appear that some of them were considerable streams centuries ago. The deforesting of the land, the draining of the swamps and cultivation of the soil have aided in lessening the volume of water, and changes with which man was not associated have undoubtedly taken place. Whatever the causes, the evidence is irrefutable that many an insignificant brook

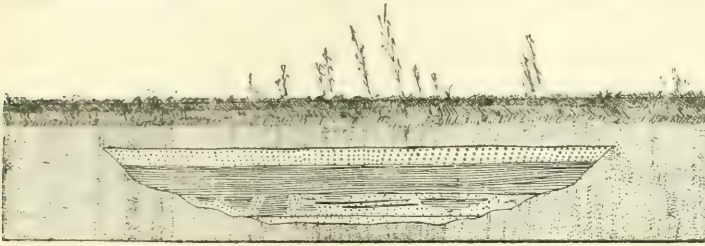


Fig. 2. Cross section of obliterated brook. Drawn from photographs. Artifacts were found at junction of the sand and clay, beneath the broad band of clay, which was overlaid by a deposit of washed, white sand. This was covered by a foot of sand and as much of the surface soil.

of to-day was a considerable stream in days gone by, and where we can step across the trickling brook an Indian might easily have floated his canoe. Then, there are other beds of upland streams that have been dry for ages, but still they can be traced.

Cross sections made where these narrow valley-like depressions of the present surface occur, tell the whole story so far as the one-time brooks are concerned, and in practically every case, it is an archæological story. The modernist may have much to say about intrusive objects, but this will not hold. These cross-sections show stratification and of material, too, that did not permit the passage of artifacts. See Fig. 2.

One such cross-section exhibited, just beneath the present soil, a deposit of tenacious clay, it overlying a compact layer of nearly white sand and this in turn resting on coarse pebbles. The pebbles had been the bed of the stream for a time, then the sand gradually accumulated and at last clay, washed from a great deposit near the surface and miles away, had been brought down and settled where I had found it, at a bend in the channel of the ancient brook. The archaeological interest of it all consisted in the occurrence of pebble-hammers and chips or flakes, artifacts as unmistakably as an arrow-point. To-day, there is not a trace upon the surface of the field indicating it was traversed by a broad and shallow stream. A brook, at present, runs not far away, that may be the same stream deflected from an older course. Often, in mid-summer, it is nearly dry, and again, after heavy rainfall is almost a raging torrent. Such brooks are common, but this one has a history not common to them all. It finds the meadow or flood-plain level after passing through a ravine, fifty feet in depth. In October, 1903, the river was so swollen that the flood-plain was submerged and for about two hundred yards of its length, the brook was reversed, so to speak, the river flowing up the gorge. In this we had a return simply to the original or an earlier condition, when the present meadows were permanently under water, and the river here a wide lake. When this brook, then, was a wider stream and before it had cut its way down to the flood-plain level, Indians were dwelling near its banks, and at a depth of something more than six feet, Mr. Volk¹ found human bones, either intentionally buried or drifted to the spot during a freshet.

It certainly cannot be said, in such a case as this, that the changes that have taken place have all occurred within his-

¹ *Crania of Trenton, N. J.* By Ales Hrdlicka. *Bulletin, Amer. Mus. Nat. Hist.* New York, 1902.

toric time. These upland brooks may well have been sparkling in the sunlight when the Delaware was yet a glaciated stream. They were the drainage outlets of the high, dry, habitable land that extended from the river to the sea. They are much diminished since that distant day and some have, as already pointed out, wholly disappeared. The majority are now reduced to the minimum of continuance. May it not be that many a stream, to which the Indians gave no name save "Sipotit"—a little brook—was a water course of importance to the argillite man of an earlier day?

Could we reconstruct the surface of the region and behold the land before the river had retired to its present bed, we would see marked differences and to our vast relief, no commingling of argillite and jasper and hopeless confusion of artifacts ancient and comparatively modern.

THE ADVANCE OF SKILL.

Attempts to trace advance in skill, whether as chippers of flint or manufacturers of pottery, have not been at all fruitful of satisfactory results. It can as safely be said that some were skillful and others not, in what they undertook, and so the great range from rude to elaborate of all their handiwork. Much, too, depended upon the material available, and yet when various localities are compared and arrow-point makers' workshop sites are examined critically, an impression is invariably had that possibly the ruder work did indicate an earlier day. I would not be inclined to place much value on this, were it not that some localities have in their surroundings, the depth at which the artifacts occur and every other circumstance appertaining to the "find," what may be called "collective evidence of age"; something very real to the explorer when in the field, just as when a jasper and an argillite horizon are compared, but unfortun-

ately not transmissible to the reader by either words or pictures.

Whatever the ultimate conclusion of the practical archaeologist, there is no escaping the comprehensive one that the historic Indian, comparatively recent comer as he is, is to be treated archaeologically as well as historically. Among the many hundreds of grooved stone axes that I have gathered, one very recently found is coated with limonite and in this respect differs in no way from millions of coated pebbles found in the so-called Columbia gravel. It was not found in a deposit of bog ore or near any spring whose waters are surcharged with the metal in solution, but on a high and dry field, where no other moisture was reached save rain-fall. This axe flatly contradicts what I have stated in a preceding page and have always maintained, that no distinctly "Indian" object was so encrusted, but argillite objects were often found in this condition. I let the two statements stand, but submit this axe, one of marked artistic design and finish, as evidence of the antiquity of the Delaware Indian.

Mr. Volk inclines to the belief that the grooved axe is a comparatively recent implement of the Indian, as he failed to find it in any of the trenches he dug and from which such a vast amount of archaeological material was taken. I should say, from what I have observed, that it is not of common occurrence in graves, where the ungrooved, polished celt is often met with.

The limonite, as deposited on this axe, could not have been, I am assured, rapidly deposited. The chemical change involved was one requiring a long lapse of time. Why all the other thousands and tens of thousands of Indian relics should have escaped, I do not know. They appear to have done so and so far are held to be not so very old: this single axe tells a far different story and strengthens the view that

as surely as that not all relics could be of the same age, so there may have been a decided advance between the first Indian implements and those last made.

CONCLUSION.

Having set forth as clearly as it was within my power to do, the several reasons for the belief I have so long entertained as to the antiquity of man in the valley of the Delaware, I desire, in conclusion, to refer briefly to a condition obtaining which perhaps has more significance than all else that can be produced bearing upon the subject. This condition, most happily not a matter of dispute, is the vast quantity and wide dispersion of what we know collectively as "Indian relics," but which I have endeavored to separate into wholly distinct, and in a measure, unrelated classes.

Subjecting to closest scrutiny and without bias, alike the upland field and the low-lying meadow, the forest and the swamp; tracing the course of every inland creek and the shore-line and islands of every river; taking into comprehensive and possibly exhaustive consideration every condition under which the traces of pre-historic man are found and contemplating their number, literally millions, there are but two conclusions possible at which the archæologist can arrive; either there was a dense population that was here for not a long period, or a sparse population which occupied the territory under consideration for very many centuries.

A dense population calls for what we may truly call Indian cities, but of such we have not been able to find satisfactory traces. It is true that a place situated as is the present city of Trenton, N. J., at the head of tide water would naturally be a centre of commercial activities and interests. Such localities as surely and logically attract as a magnet does iron filings. It has been a town site always,

we might say, and as it attracted the aborigine, attracted the European settler and never was founded by an individual as have been most towns of which we have knowledge as to their origin. The falls of the Delaware—its original English name—has better claim to be called a centre than a town. People there were continually coming and going, but the resident population may have been small. It was a busy place but not what we now call a city. It possibly never knew quiet until the Indian was dispossessed and then it slumbered peacefully for two hundred years.

The Indian, depending largely upon hunting and not inconsiderably upon agriculture, had no need for a large town and it is doubtful if the most populous ever ran much into the thousands, but where the location was, by reason of its convenience, *i. e.*, easy of access by both canoe and over-land, it became a fixed condition from the very beginning. As such, we can understand why the relics we collect should be in such numbers and beaten so deeply into the soil that some have reached at length to a depth that nears the horizon of an earlier people.

With one such former site of an Indian town I have long been familiar and am thoroughly convinced of its moderate population, extending over centuries rather than a dense population which tarried here but a number of years. The relics that we now find, the varying character of the graves and the significant depth of the cooking sites, all give an impression of antiquity and suggest improvement in certain directions during the continuance of the town, as such.

It may be said that every stream of sufficient volume to permit of canoe navigation had a "town" upon its banks, and villages and single settlements or a single family were at every desirable, if not at every available point, and here relics are still found in abundance, but between each of these many streams lies a wide stretch of land, then heavily

forested, and what of such territory? Certainly it would require a long time for the personal possessions of these aboriginal villagers to be scattered over the entire surface of the State, and they are so scattered and in numbers that have a great deal to do with the question of the antiquity of their one-time owners, and I do not include the omnipresent arrow-point in this consideration.

A word now with reference to them. There are over five million acres in New Jersey, and if we allowed one arrow-point to an acre, this number, brought together, would fill no trivial space in a museum and would be impressive in more than one direction, but while there are many acres where they seem to be absent and possibly may be, but I am not convinced of it, there are others where these same little arrow-points are so abundant that we are probably within bounds in allowing at least one to the acre, for the whole State. We leave it to those who are statistically inclined to estimate the time required to make and to lose them and the probable population that used these five millions of arrow-points, bidding them remember always that the ruder argillite artifacts outnumber them, perhaps, ten to one.

But little need be said in this final summing up of this discussion of a vexed question. That the region was profoundly affected by the glacial conditions of thousands of years ago, no one can deny; that an arctic fauna wandered over the plains that escaped the encroaching ice, no one doubts; but was man a member of that fauna? My claim is that he was. Time passed and other conditions came into being and man of less primitive mould replaced the ice-age nomad. He passed, and the Indian we all know, the historic Red man came upon the scene. Looking back to the day when I first picked up an arrow-point and gave it serious thought, and recalling all pertaining to ancient American man that I have seen since then, the record of the

past does not seem to-day one difficult to read. Indeed, I hold that it never has been, and maintain, as I have done since the questioning of man's antiquity in this region began, that the manifold attempts to modernize all traces of man on the eastern coast of North America can safely be relegated to the limbo of misdirected energy. Studied in the proper spirit and after the needful preliminary study of archaeology as a whole, the student will find himself, when in the field—ever a more desirable place than the museum—face to face with evidences of an antiquity that is to be measured by centuries rather than by years.

